

This fact sheet answers the most frequently asked health questions (FAQs) about diborane. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Diborane is a manufactured, toxic, flammable gas. Exposure can occur primarily during manufacture or use in industry. The general population is not exposed to diborane. Exposure to diborane can cause irritation of the eyes, nose, throat, and respiratory airway. It can also cause skin irritation. This substance has been found in at least 3 of the 1,585 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is diborane?

Diborane is a colorless gas at room temperature with a repulsive, sweet odor. It mixes well with air and easily forms explosive mixtures. Diborane will ignite spontaneously in moist air at room temperature.

Diborane is used in rocket propellants, as a reducing agent, as a rubber vulcanizer, as a catalyst for hydrocarbon polymerization, as a flame-speed accelerator, and as a doping agent. It is also used in electronics to impart electrical properties in pure crystals.

What happens to diborane when it enters the environment?

☐ Diborane is a gas that can spontaneously burn or explode in air at normal room temperatures.

☐ Diborane is slightly soluble in water, but it will decompose rapidly when in contact with water producing boric acid and hydrogen gas which is very flammable.

☐ Diborane is a gas that is not found in soil. If released to soil it is likely that it would react violently and spontaneously combust.

☐ Diborane does not accumulate in the food chain.

How might I be exposed to diborane?

☐ Diborane is a very dangerous gas that is only used in chemical laboratories by experienced professionals. The general population will not be exposed to diborane.

☐ Diborane is a very toxic, flammable, gas used by chemists to make other compounds. Workers employed in occupations that manufacture or use diborane may be exposed to this compound by breathing in its vapors.

How can diborane affect my health?

The toxic effects of diborane are primarily due to its irritant properties. Short-term exposure to diborane can cause a sensation of tightness of the chest, shortness of breath,

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cough, and wheezing. These signs and symptoms can occur immediately or be delayed for up to 24 hours. Skin and eye irritation can also occur. Studies in animals have shown that diborane causes the same type of effects observed in humans.

People exposed for a long time to low amounts of diborane have experienced respiratory irritation, seizures, fatigue, drowsiness, confusion, and occasional transient tremors.

There is no information to determine whether exposure to diborane affects the reproductive system in humans or in animals.

How likely is diborane to cause cancer?

There are no studies of carcinogenicity of diborane in humans or in animals. The Department of Health and Human Services (DHHS), the International Agency for Research on Cancer (IARC), and the EPA have not classified diborane as to its carcinogenicity.

How can diborane affect children?

There are no studies on the health effects of children exposed to diborane. Although exposure of children to diborane is unlikely, it is reasonable to assume that it will cause health effects similar to those seen in adults.

We do not know if exposure to diborane will result in birth defects or other developmental effects in people.

How can families reduce the risk of exposure to diborane?

It is unlikely that the general population will be exposed to diborane.

Is there a medical test to show whether I've been exposed to diborane?

There are no tests for measuring diborane levels in the body. If you suspect that you have been exposed to diborane, a chest x-ray and pulmonary function tests may be appropriate to determine if your lungs have been damaged. These tests are usually not available in the doctor's office, but can be done in a hospital or clinic.

Has the federal government made recommendations to protect human health?

The Occupational Safety and Health Administration (OSHA) sets a limit for diborane in workplace air of 0.1 parts of diborane per million parts of air (0.1 ppm) for an 8-hour workday, 40-hour work week.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs™ Internet address is <http://www.atsdr.cdc.gov/toxfaq.html>. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

